

WHAT IS CLAIMED IS:

1. A process for forming an organometallic cyclometallated iridium compound comprising reacting an iridium halide complex with a silver salt and excess organic cyclometallating ligand in a diol solvent.
2. The process of claim 1 wherein the diol solvent has a boiling point in the range of 140-220°C.
3. The process of claim 1 wherein the diol solvent has 2 to 6 carbon atoms.
4. The process of claim 1 wherein the diol is an aromatic diol.
5. The process of claim 4 where the aromatic diol is catechol.
6. The process of claim 1 where the diol solvent is selected from the group consisting of 1,2-propanediol, 1,3-propanediol, and 1,3-butanediol.
7. The process of claim 1 where the diol solvent is ethylene glycol.
8. The process of claim 1 where the silver salt is selected from silver tetrafluoroborate, silver trifluoroacetate, or silver trifluoromethanesulfonate.
9. The process of claim 1 where the iridium halide complex is selected from tripotassium hexachloroiridate(III) or tripotassium hexabromoiridate(III).
10. The process of claim 1 where the iridium halide complex is selected from iridium(III) chloride hydrate or iridium(III) bromide hydrate.

11. The process of claim 1 where the iridium halide complex is selected from dipotassium hexachloroiridate(IV) or dipotassium hexabromoiridate(IV).

12. A process for forming an organometallic cyclometallated iridium compound comprising reacting a dimeric iridium complex containing bridging halides with a silver salt and an organic cyclometallating ligand and in a diol solvent, wherein the dimeric iridium complex is of Formula (1):



wherein:

L is a bidentate cyclometallating ligand; and

X is a halide.

13. The process of claim 12 wherein the diol solvent has a boiling point in the range of 140-220°C.

14. The process of claim 12 wherein the diol solvent has 2 to 6 carbon atoms.

15. The process of claim 12 wherein the diol is an aromatic diol.

16. The process of claim 15 where the aromatic diol is catechol.

17. The process of claim 12 where the diol solvent is selected from the group consisting of 1,2-propanediol, 1,3-propanediol, and 1,3-butanediol.

18. The process of claim 12 where the diol solvent is ethylene glycol.

19. The process of claim 12 where the silver salt is selected from silver tetrafluoroborate, silver trifluoroacetate, or silver trifluoromethanesulfonate.

20. A process for forming a dimeric iridium complex containing bridging halides of comprising reacting an iridium halide complex with an organic cyclometallating ligand in a diol solvent, wherein the dimeric iridium complex containing bridging halides is represented by Formula (1):



wherein:

L is a bidentate cyclometallating ligand; and

X is a halide.

21. The process of claim 20 wherein the diol solvent has a boiling point in the range of 140-220°C.

22. The process of claim 20 wherein the diol solvent has 2 to 6 carbon atoms.

23. The process of claim 20 wherein the diol is an aromatic diol.

24. The process of claim 23 where the aromatic diol is catechol.

25. The process of claim 20 where the diol solvent is selected from the group consisting of 1,2-propanediol, 1,3-propanediol, and 1,3-butanediol.

26. The process of claim 20 where the diol solvent is ethylene glycol.

27. The process of claim 20 where the iridium halide complex is selected from tripotassium hexachloroiridate(III) or tripotassium hexabromoiridate(III).

28. The process of claim 20 where the iridium halide complex is selected from iridium(III) chloride hydrate or iridium(III) bromide hydrate.
29. The process of claim 20 where the iridium halide complex is selected from dipotassium hexachloroiridate(IV) or dipotassium hexabromoiridate(IV).
30. The process of claim 12, wherein the halide is bromide.
31. The process of claim 20, wherein the halide is bromide.
32. The process of claim 1, wherein the iridium halide complex is reacted with excess organic cyclometallating ligand in a diol solvent and then a silver salt is combined with the reaction mixture.
33. A process for forming an organometallic cyclometallated iridium compound comprising reacting a complex of the type L_2IrX with excess organic cyclometallating ligand and in a diol solvent, wherein L is a cyclometallating ligand forming metal-carbon and metal-nitrogen bonds, while X is a monoanionic bidentate ligand that does not form metal carbon bonds.
34. The process as in claim 33 wherein X is acetylacetone.
35. The process of claim 33 wherein the diol solvent has a boiling point in the range of 140-220°C.
36. The process of claim 33 wherein the diol solvent has 2 to 6 carbon atoms.
37. The process of claim 33 wherein the diol is an aromatic diol.
38. The process of claim 37 wherein the aromatic diol is catechol.

39. The process of claim 33 wherein the diol solvent is selected from the group consisting of 1,2-propanediol, 1,3-propanediol, and 1,3-butanediol.
40. The process of claim 33 wherein the diol solvent is ethylene glycol.
41. The process of claim 1 carried out as a one-pot reaction.